TECHNICAL NOTES

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A Field Test of the Baker Seed Tool in Northeastern Minnesota

Because of the high cost of planting, there has always been a keen interest in the possibility of direct seeding as a means of obtaining conifer regeneration. Over the years, however, direct seeding trials have had rather spotty success in the Lake States.

The Lake States Forest Experiment Station has conducted trials of direct seeding with conifers since about 1926. These trials were conducted with various species under a wide range of weather and seedbed conditions. Some of the tests were highly successful; others were complete failures. The failures could usually be attributed to adverse weather conditions, poor seedbeds, aggressive competing vegetation, or seed-eating rodents.

Various direct seeding devices have been developed to try to improve field germination and survival, and also to conserve seed. One such device is the Baker hand-seeding tool reported on here. Essentially, the tool is a hollow metal tube with a handle and seed hopper at the top, and a plunger at the lower end which pushes the seed into the ground after it has dropped through the tube. The number of seeds released each time depends upon the size of the seed being sown and on the size of the selector device being used.

The Baker tool was tested during 1953 at six different locations on the Superi[illegible] National Forest in northeastern Minnesota. The areas had been logged from 1 to 6 years previously. On each area seeding was done in May, June, July, Septem[illegible] and October, using red pine and jack pine seed. The treatments tried were: (1) seeding on duff and screening, (2) seeding on scalped spots and screening, (3) seeding on duff with no screening, and (4) seeding on scalped spots with no screening.

Results varied considerably by treatment, but no treatment was very successful. Table 1 summarizes the findings at the end of 3 growing seasons. Although stocking was poor in all cases, the table shows some definite trends. Spring and early summer seeding, for example, was consistently better than fall seeding. Even the poorest of the spring sowings (3.2 percent stocking) was better than the best fall sowing (2.4 percent), and the best spring sowing was three times as good (7.6 percent).

(over)

Table 1.--Percent of spots stocked at end of third year, including both screened and unscreened spots 1/

Species	Ground treatment	Month seeded (all areas combined)				
		May	June	July	Sept.	Oct.
Jack pine	Scalped	3.2	6.8	4.8	1.2	2.4
	Unscalped	4.8	5.2	4.0	2.4	1.6
	Average	4.0	6.0	4.4	1.8	2.0
Red pine	Scalped	4.8	3.6	4.0	1.2	1.6
	Unscalped	7.6	6.4	5.2	1.2	2.0
	Average	6.2	5.0	4.6	1.2	1.8

1/ One-fourth of the spots were screened for the first 2 years.

The table also shows that red pine had better survival on unscalped than on scalped spots. This was true for each of the 5 months except September which showed no difference in survival between the two treatments. For jack pine neither treatment showed a clear-cut advantage. Scalped spots showed higher survival for 3 of the 5 months, but unscalped spots were better for the other 2. For red pine the poorer survival on scalped spots seemed to be due to the filling up of these spots with leaves, which smothered some of the seedlings. The faster growing jack pine seedlings were apparently less affected by this problem.

Screening was decidedly beneficial for both species. Besides affording protection against rodents and birds, the screens also provided some shade. On the average, screened spots had about four times as good survival as unscreened spots.

Results also varied considerably by area. Best results were obtained in the spring seeding (May and June) on an area which had been logged 1 year before seeding. Third-year stocking for the May seeding here averaged 16 percent for red pine and 10 percent for jack; for the June seeding it was 11 percent for red pine and 10 percent for jack pine. Even if 10-percent survival could be consistently relied upon, this would still require 5,000 seed spots per acre in order to have 500 stocked spots per acre after 3 years.

Based on these tests, the Baker seed tool cannot now be considered a successful device for restocking upland cutover areas in northeastern Minnesota. Future trials and more research on seedbeds, microclimate, etc., may change this picture.

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